Enclosure 2

Summary

NASA Accomplishments during 2002
and
FY 2004 Budget Request

NASA has made significant progress during 2002 on a number of important research and exploration objectives. During the past year, NASA:

- Captured a dramatic new portrait of the infant universe in sharp focus. NASA's Wilkinson Microwave Anistropy Probe revealed the first generation of stars that began shining only 200 million years after the big bang and forecasted the age of the universe at 13.7 billion years old. Most striking though was the probe's discovery that the universe will probably expand forever.
- Upgraded the Hubble Space Telescope on *Columbia's* mission (STS-109) in March 2002. *Columbia's* astronauts installed new solar panels, a better central power unit and a new camera that increased Hubble's "vision" tenfold, and revived a disabled infrared camera using an experimental cooling system.
- Celebrated Riccardo Giacconi's 2002 Nobel Prize in Physics for his pioneering NASA sponsored work in the field of X-Ray astronomy. This work has led to important discoveries about the nature of black holes, the formation of galaxies, and the life cycles of stars.
- Demonstrated a prototype device that automatically and continuously monitors the air for the presence of bacterial spores that may be used to detect biohazards, such as anthrax.
- Made progress on the development of a radar system for aircraft that detects atmospheric turbulence, thus improving prospects for commercial airliners to avoid the kind of bumpy weather most airline passengers find uncomfortable.
- Advanced technology to reduce airliner fuel tank fires or explosions, in our effort to make air travel safer and more secure.
- Began tests on a technology effort to develop lighter-weight flexible-wing aircraft.
- Measured through the Mars Odyssey spacecraft enough water ice buried deep under the poles of the red planet, that if thawed, could fill Lake Michigan twice over.
- Discovered for the first time, a planetary system, circling the nearby star 55 Cancri, with a Jupiter-sized planet at about the same distance for its parent star as our own Jupiter is from our sun. This discovery enhances the possibility that Earth-like planets could exist in such systems throughout the galaxy.
- Conducted Earth Science research that may one day allow public health officials to better track and predict the spread of West Nile Virus or similar diseases.
- Worked to develop cutting-edge technologies that will increase our weather forecasting capability from the current three-to-five-day accuracy level up to a seven-to-ten-day level within this decade.
- Observed the disintegration of the Antarctic Larsen Ice Shelf and the seasonal acceleration of the Greenland ice sheet.
- Encouraged thousands of students to learn more about space exploration through a nationwide contest to "Name the Rovers" that will launch toward Mars this year.
- Published, "Touch the Universe: A NASA Braille Book of Astronomy," a book that for the first time presents for visually impaired readers color images of planets, nebulae, stars, and galaxies. Each image is embossed with lines, bumps, and other textures. The

raised patterns translate colors, shapes, and other intricate details of the cosmic objects, allowing visually impaired people to feel what they cannot see.

- Celebrated a second year of continuous human habitation on the International Space Station, the largest and most sophisticated spacecraft ever built, and continued assembly with four Space Shuttle missions.
- Reflecting the Agency's increased ISS research tempo, conducted approximately 48 research and technology development experiments aboard Station, including the first materials science research aboard Station, testing medical procedures for controlling the negative effects of space flight and increasing understanding of changes to bone and the central nervous system that occur in space. Astronauts conducted advanced cell culturing research, broke new ground in the study of dynamic systems, made up of tiny particles mixed in a liquid (colloids), and installed three new Station experiment equipment racks.

FY 2004 Budget Detail

Space Science Enterprise

The Space Science Enterprise seeks to answer fundamental questions about life in the universe, including how it arose, its mechanisms, where in the solar system it may have originated or exist today, and whether there are similar planetary environments around other stars where the signature of life can be found. The Enterprise also seeks to understand how the universe began and evolved, how stars and galaxies formed, and how matter and energy are entwined on the grandest scale. The proposed FY 2004 budget for the Space Science is $4.007 billion. The five theme areas in the Space Science Enterprise are:

Solar System Exploration

We are blessed to live in a fascinating neighborhood, one that we are getting to know better every day. This theme seeks to understand how our own Solar System formed and evolved and to determine if life exists beyond Earth.

The Administration's FY 2004 budget request is $1,359 million. The budget request will support: the launch of the Deep Impact mission to probe below the surface of comet Temple-1 in January 2004; the Stardust spacecraft's January 2004 encounter with the comet Wild-2, and Stardust's return to Earth with dust samples from the comet in 2006; the March 2004 launch of the MESSENGER mission to explore Mercury, our least explored terrestrial planet; the arrival at Saturn of the Cassini spacecraft in July 2004, following a seven-year journey; and the return to Earth in September 2004 of the Genesis spacecraft with its samples of the solar wind following its two-year "sunbath". The budget also contains funding for the New Frontiers program to explore the outer planets in the Solar System and for Astrobiology research to improve our ability to find and identify potential life harboring planets.

We are very excited about two new Solar System Exploration initiatives that the budget will support. Building on the work of our Nuclear Systems Initiative, Project Prometheus is a new start to develop breakthrough power and propulsion technology that will lead to nuclear-powered spacecraft that will search early in the next decade for evidence of global subsurface oceans and possible organic material on Jupiter's three icy Galilean moons: Europa, Ganymede, and Callisto. Such advances in nuclear power and propulsion have set the stage for the next phase of outer solar system exploration.

Following in the same progress that led from Pony Express to Telegraph to Telephone, our Optical Communications initiative will use laser light instead of radio waves to revolutionize the way our spacecraft gather and report back information as they continue to scout the Solar System. Today, using conventional radio frequency communications, the Mars Reconnaissance Orbiter will take 21 months to map 20 percent of the red planet's surface. By contrast, optical communications would allow the *entire* surface to be mapped in four months. The budget will support a demonstration of the technology in 2009 using a Mars orbiting satellite that will relay data to high-altitude Earth balloons. If successful, this technology promises to achieve dramatic reductions in the cost per byte of data returned and could ultimately replace the Deep Space Network.

Mars Exploration

The Mars Odyssey spacecraft's discovery of large quantities of water frozen beneath the Mars' polar areas provides additional tantalizing evidence that our neighboring planet had a wet and warmer past. This water and hints of relatively recent liquid water flows make Mars the most likely place to seek evidence of ancient or present extraterrestrial life. Mars is also worth studying because much can be learned comparatively between the current and past geology, atmospheres, and magnetic fields of Earth with Mars. We also hope to advance our understanding of Mars because some day in the not so distant future, human explorers may take humanity's next giant leap to the Red Planet.

The proposed Mars exploration budget is $570 million. This request will support our goal of 90 days of surface operations of the twin Mars Exploration Rovers, set to begin in January and February of 2004 at sites where ancient water once flowed.

The budget also supports the continued development of: the Mars Reconnaissance Orbiter, a spacecraft that will map Martian surface features as small as a basketball in 2005; the Mars Science Laboratory, a rover that will traverse tens of kilometers over Mars in 2009 and last over a year, digging and drilling for unique samples to study in its onboard laboratory; and the telecommunications satellite that will demonstrate our laser light optical communications technology in 2009.

Astronomical Search for Origins

The astounding portrait of the infant universe captured by NASA's Wilkinson Microwave Anistropy Probe provides one more demonstration of the human capacity to probe more deeply into the mysteries of creation. This theme strives to answer two profound questions: Where did we come from? Are we alone? It does so by observing the birth of the earliest galaxies and the formation of stars, by finding planetary systems in our galactic neighborhood, including those capable of harboring life, and by learning whether life exists beyond our Solar System. One year may seem inconsequential in a Universe that is 13.7 billion years old, but as we learned during the last year, a great deal of knowledge and understanding can be obtained in the period it takes the Earth to orbit the Sun.

The Administration's proposed FY 2004 budget request for the Astronomical Search for Origins is $877 million. The budget will provide funding for: continued operations of the Hubble Space Telescope; the development of the next-generation James Webb Space Telescope and the Space Interferometry Mission, a device scheduled for launch in 2009 that will increase our ability to detect planets around nearby stars; and initial science operations of the Space Infrared Telescope

Facility, the final mission of NASA's Great Observatory Program. The budget was also designed to support the final Space Shuttle servicing mission to the Hubble Space Telescope, a mission that is now on hold pending the report of the Columbia Accident Investigation Board.

Structure and Evolution of the Universe

This theme seeks to understand the nature and phenomena of the Universe. It seeks to understand the fundamental laws of space, time and energy and to trace the cycles that have created the conditions for our own existence. This is accomplished in part by observing signals from the Big Bang, mapping the extreme distortions of space-time about black holes, investigating galaxies, and understanding the most energetic events in the universe. The theme also attempts to understand the mysterious dark energy that pervades the Universe and determines its ultimate destiny.

The proposed budget for this theme is $432 million, which will support development of the Gamma-ray Large Area Space Telescope, a mission to study high-energy objects like black holes.

The budget will also support a new initiative that will honor the continuing legacy of Albert Einstein, some 99 years after Einstein developed his theory of Special Relativity. The Beyond Einstein initiative will attempt to answer three questions left unanswered by Einstein's theories: What powered the Big Bang? What happens to space, time, and matter at the edge of a black hole? What is the mysterious dark energy expanding the Universe? Under the initiative, a Laser Interferometer Space Antenna will use three spacecraft "formation flying" five million kilometers apart in a triangle to observe the distortion of space due to gravity waves. Also, Constellation-X, an X-ray telescope 100 times more powerful than all existing X-ray telescopes, will use a team of powerful X-ray telescopes working in unison to observe black holes, investigate "recycled" stellar material, and search for the "missing matter" in the universe. Finally, the initiative will support Einstein Probes, a program that will begin later this decade, consisting of fully and openly competed missions (in the manner of the Discovery, Explorers, and New Frontiers programs) to conduct investigations that benefit science objectives within the theme.

Sun-Earth Connections

We should never take our life-sustaining Sun for granted. NASA's Sun-Earth Connections theme investigates our Sun and how its structure and behavior affect Earth. NASA seeks to understand how the variability of solar radiation affects Earth's climate, and how we can better predict solar flares that affect the upper atmosphere and can damage satellites and disable the power distribution grid on the ground. NASA also uses the Sun as an ideal laboratory for researching basic physics and learning how other stars function.

The proposed budget for NASA's Sun-Earth Connections theme is $770 million. The budget will support the development of the STEREO, the Solar Dynamics Observatory and future flight missions. Scheduled for a 2005 launch, STEREO will use two identically equipped spacecraft to provide revolutionary 3-D imaging of coronal mass ejections. The Solar Dynamics Observatory, which will study the Sun's magnetic field and the dynamic processes that influence space weather, will enter implementation of development in January 2004.

Earth Science Enterprise

In the near-half century that we have lived in the "space age" the most interesting planet that NASA spacecraft have explored is our own home in the universe. Spacecraft observations

combined with atmospheric, ground-based and oceanic measurements have enabled a systematic study of Earth processes, leading to important scientific advances and tangible benefits to the American public. NASA's vision of "improving life here" starts with the Earth Science Enterprise's study of planet Earth from space. The Enterprise seeks to understand and protect our home planet by advancing Earth system science and applying the results to improve prediction of climate, weather, and natural hazards. The proposed FY 2004 budget for Earth Science is $1,552 million. The two theme areas for Earth Science are:

Earth System Science

Within this theme, NASA is deploying and operating the first comprehensive constellation of Earth-observing research satellites designed to reveal interactions among Earth's continents, atmosphere, oceans, ice, and life. These interactions produce the conditions that sustain life on Earth. Data and information from NASA satellites enable researchers to understand the causes and consequences of global change and inform the decisions made by governments, businesses, and citizens to improve our quality of life.

The $1.477 million FY 2004 budget request for Earth System Science will support the launches in 2004 of three complementary formation-flying polar orbiting satellites, which in effect will become a super-satellite. They are: AURA, which will study Earth's ozone, air quality and climate; Cloudsat, which will measure the structure of clouds to better quantify their key role in the Earth's water cycle and climate system; and CALIPSO, the NASA-French project to determine how the climate, aerosols and clouds interact. Calipso, coupled with Aura and an advanced polarimeter slated for launch in 2007 under an initiative to accelerate evaluation of non-carbon dioxide (CO2) impacts on climate change as part of the Administration's Global Climate Change Research Initiative, will help determine the role of aerosols in climate, reducing one of the largest uncertainties in climate models.

Significantly, the Earth System Science budget will also provide $524 million, in conjunction with the administration's Global Climate Change Research Initiative, for research and modeling that will help answer critical scientific questions on climate change to aid policy and economic decision makers.

Other major Earth Science work in 2004 that the budget will support include: Using satellite observations to provide daily and seasonal global atmospheric water vapor, rainfall, snowfall, sea-ice and ice-sheet maps to improve the scientific understanding and modeling of water cycles throughout the Earth system; Improving the predictive capabilities of regional weather models through satellite-derived localized temperature and moisture profiles; and assimilating satellite and in situ observations into a variety of ocean, atmospheric, and ice models for the purpose of estimating the state of Earth's seasonal and decadal climate.

The budget will also support the National Polar-orbiting Operational Environmental Satellite System (NPOESS) Preparatory Project under development in partnership with the National Oceanic and Atmospheric Administration and the Department of Defense. This project, slated for launch in 2006, will maintain the continuity of certain environmental data sets that were initiated with NASA's Terra and Aqua satellites, prior to the launch of the operational NPOESS system in 2009. Also supported with be the Landsat data continuity mission, an innovative program to seek partnerships with industry that use critical land remote sensing data.

Earth Science Applications

NASA recognizes that by working in partnership with other Federal agencies, we can leverage our research results and Earth observation information products to provide significant benefits to the American public. Within our Earth Science Applications theme we have identified applications where we can improve decision support systems, such as weather prediction models and near-airport terrain databases operated by our partner agencies. For each application, joint research and demonstration projects are under way or being developed. We are also developing crosscutting solutions that advance the use of NASA information and technology across a range of potential new applications.

The $75 million FY 2004 budget request for Earth Science Applications will support a focus on 12 specific applications of national priority where other agencies' decision support systems can be markedly improved based on NASA-provided data and information. In 2004, NASA intends to benchmark improvements to air quality and agricultural productivity and competitively select projects for the Research, Education, Applications Solutions Network (REASON) program to serve national priorities.

Biological and Physical Research Enterprise

On their 16-day mission of exploration and discovery the seven *Columbia* astronauts conducted medical investigations related to cancer, osteoporosis and kidney stones, all with the goal of advancing our understanding of nature and the world we live in. The research operations were smooth and productive, with new phenomena being observed in combustion science and in cell science. As Commander Rick Husband said, "I think one of the legacies of NASA is that you always push forward. And STS-107 is doing that on the science side—pushing human science knowledge forward."

Our Biological and Physical Research Enterprise exists to push the frontiers of science forward. The Enterprise uses the rich opportunities provided by space flight to pursue answers to a broad set of scientific questions, including those about the human health risks of space flight. The space environment offers a laboratory, unique in the history of science, that allows the study of biological and physical processes. Experiments that take advantage of this environment extend from basic biology to quantum mechanics and from fundamental research to research with near-term applications in medicine and industry.

The proposed FY 2004 budget for Biological and Physical Research is $973 million. The three theme areas in Biological and Physical Research are:

<u>Biological Sciences Research</u>

Within this theme, NASA determines ways to support a safe human presence in space. We are conducting research to define and control the physiological and psychological risks posed to human health by exposure in space to radiation, reduced gravity, and isolation. This theme also conducts research and development to improve the performance of life support systems. It includes a basic biology research component that seeks both to pursue fundamental biological research questions from cell to tissues to whole organisms which produce results that can support advanced methods for enabling the continued human exploration of space.

The proposed $359 million FY 2004 budget for Biological Sciences Research will fund expanded ground research into how humans can adapt to the hazards of space flight for unprecedented periods of time under a new Human Research Initiative. A flight program in high priority areas

of advanced human support technology to reduce mass to orbit and beyond for life support equipment by a factor of three is also funded by this Initiative.

Physical Sciences Research

This theme supports research that takes advantage of the unique environment of Space to expand our understanding of the fundamental laws of nature. We also support applied physical science research to improve safety and performance for human exploration and research that has applications for American industry.

Activities in this theme are structured to respond to the Research Maximization and Prioritization Task Force process, undertaken last year to prioritize BPR research activities. The budget request of $353 million will support major space flight hardware development for physical sciences research on the International Space Station, while reducing funding for lower priority areas such as biomolecular technology, and structural biology future facility class space flight hardware, and level II program management support. The budget will increase funding for research of strategic importance to NASA's long range-goals, including radiation protection and basic research enabling knowledge for power and propulsion technologies. The budget also contains funding for our new Human Research Initiative, with funds targeted for spacecraft system innovations such as less massive fluid and thermal control methods and fire safety improvements.

In 2004, the budget supports the preparation of the first major Physical Sciences Research facility rack to the International Space Station, and the beginning of prime research facility operations on the Space Station.

Research Partnerships and Flight Support

The Research Partnership element of this theme establishes policies and allocates space resources to encourage and develop research partnerships in the pursuit of NASA missions and Enterprise scientific objectives. This research supports product development on Earth and leverages industry resources to accelerate progress in our strategic research areas. Ultimately, Research Partnerships may support development of an infrastructure that can be applied to human exploration.

A majority of the proposed $261 million budget in FY 2004 for Research Partnerships and Flight Support will apply to the Flight Support element of this theme. The Flight Support element will be augmented by two activities: (1) the transfer of the Alpha Magnetic spectrometer program management and budget from Physical Sciences Research; and, (2) the consolidation of the Enterprise Support program content and budget, previously diffused across various programmatic components. The Flight Support activity includes multi-user hardware development, payload integration and training, and payload operations support.

The budget also provides for the restructuring of NASA's Space Product Development program by aligning industrial partnerships with NASA mission needs and Enterprise scientific objectives. We intend to review our existing Research Partnership Centers to determine which of these will be retained.

Aerospace Technology Enterprise

The Aerospace Technology Enterprise contributes to the NASA Vision by pioneering and developing advanced technologies. These technologies, in turn, improve the air transportation

system, access to space, and science missions. This Enterprise also develops technology partnerships with industry and academia outside traditional aerospace fields. The Aerospace Technology Enterprise is comprised of four themes:

Aeronautics Technology

NASA's Aeronautics Program develops technologies that can help create a safer, more secure, environmentally friendly and efficient air transportation system, increase performance of military aircraft, and develop new uses for science or commercial missions. This theme also enhances the Nation's security through its partnerships with the Department of Defense (DOD) and Federal Aviation Administration (FAA) and the Department of Homeland Security. Research areas include advanced propulsion technologies, lightweight high-strength adaptable structures, adaptive controls, advanced vehicle designed, and new collaborative design and development tools. In collaboration with the FAA, research is conducted in air traffic management technologies for new automation tools and concepts of operations. Major funding allocation includes three technology initiatives in aviation security, airspace systems, and quiet aircraft.

The FY 2004 budget request for Aeronautics is $959 million. It includes $169 million for Aviation Safety and Security projects, $217 million for Airspace Systems, and $574 for Vehicle Systems. The budget request includes funding for three new initiatives:

- Aviation Security—the budget includes $21 million for this new initiative ($225 million over five years); it will develop technology for commercial aircraft and airspace protection, including development of damage-tolerant structures and autonomous and reconfigurable flight controls technology to prevent aircraft from being used as weapons and to protect against catastrophic loss of the aircraft in the event of damage from sabotage or explosives.

- National Airspace System Transition—the budget includes $27 million for this new initiative ($100 million over five years); it will enable technology, in cooperation with the FAA, to transition to a next-generation National Airspace System that would increase the capacity, efficiency, and security of the system to meet the mobility and economic-growth needs of the Nation, reducing delays and increasing air transportation efficiency.

- Quiet Aircraft Technology—the budget includes $15 million for this new initiative ($100 million over five years); it will accelerate development and transfer of technologies that will reduce perceived noise in half by 2007 compared to the 1997 state-of-the-art.

Space Launch Initiative

The objective of the Space Launch Initiative is to ensure safe, affordable, and reliable access to space. Funding is focused on the Orbital Space Plan (OSP) program to develop a crew rescue and transfer capability, and on the Next Generation Launch Technology program for advanced kerosene engine development and hypersonic propulsion research and testing. The FY 2004 budget request is fully consistent with the FY 2003 Budget Amendment submitted to Congress in November 2002.

The FY 2004 budget request includes $1.065 billion for SLI, including $550 million for the OSP to develop a crew return capability from Space Station by 2010 and crew transfer capability atop an expendable launch vehicle by 2012. Funding will support technology demonstrators such as X-37 and advanced design studies. The budget request also includes $515 million for the Next

Generation Launch Technology Program to meet NASA's future space launch needs. Funding includes advanced kerosene engine development and hypersonic propulsion research and testing.

The budget envisions several key events in 2004:

- Test flight of DART vehicle to demonstrate autonomous rendezvous technology between a chase vehicle and an on-orbit satellite;
- Drop test of X-37 vehicle from carrier aircraft to demonstrate autonomous landing capability as a precursor to a possible orbital demonstration; and,
- Preliminary design review of OSP to support a full-scale development decision.

Mission and Scientific Measurement Technologies

This Theme develops crosscutting technology for a variety of aviation and space applications. Funding is focused on communications, power and propulsion systems, micro-devices and instruments, information technology, nanotechnology, and biotechnology. These technology advances will have the potential to open a new era in aviation and allow space missions to expand our knowledge of Earth and the universe.

The FY 2004 budget request is $438 million, which includes $233 million for Computing, Information, and Communications Technologies, $44 million for Engineering for Complex Systems, and $161 million for Enabling Concepts and Technologies.

Innovative Technology Transfer Partnerships

This theme develops partnerships with industry and academia to develop new technology that supports NASA programs and transfers NASA technology to U.S. industry. The FY 2004 budget request introduces a creative partnership program to sponsor dual use technologies, called Enterprise Engine, and is discontinuing the existing centralized commercial technology promotion efforts and, instead, recompeting and refocusing our technology transfer programs across the Enterprises to maximize benefits to NASA and the taxpayer.

The FY 2004 budget request is $169 million, which includes $5 million for the Enterprise Engine, $33 million for recompeting and refocusing technology transfer efforts to maximize benefits, and $131 million for the SBIR/STTR programs.

Education Enterprise

Education is NASA's newest Enterprise, established in 2002, to inspire more students to pursue the study of science, technology, engineering and mathematics, and ultimately to choose careers in those disciplines or other aeronautics and space-related fields. The new Enterprise will unify the educational programs in NASA's other five enterprises and at NASA's 10 field Centers under a One NASA Education vision. NASA's Education will permeate and be embedded within all the Agency's activities.

NASA's Education Program will provide unique teaching and learning experiences, as only NASA can, through the Agency's research and flight capabilities. Students and educators will be able to work with NASA and university scientists to use real data to study the Earth, explore Mars, and conduct other scientific investigations. They will work with NASA's engineers to learn what it takes to develop the new technology required to reach the farthest regions of the solar system and to live and work in space. It is important that the next generation of explorers represents the full spectrum of the U.S. population, including minority students and those from

low-income families. To ensure the diversity of NASA's workforce, our educational programs pay particular attention to under-represented groups. NASA Education will support our Nation's universities to educate more students in science and engineering by providing meaningful research and internship opportunities for qualified students, plus a roadmap for students to seek NASA careers.

The FY 2004 budget request of $170 million includes $78 million for education programs including the continuation of pipeline development programs for students at all educational levels with the continuation of Space Grant/EPSCOR programs and $92 million for Minority University Research and Education. It also includes $26 million for an Education Initiative that encompasses the Educator Astronaut Program, NASA Explorer Schools Program, Scholarship for Service, and Explorer Institutes.

Space Flight Enterprise

International Space Station

This theme supports activities for continuing a permanent human presence in Earth orbit—the International Space Station. The Space Station provides a long-duration habitable laboratory for science and research activities to investigate the limits of human performance, expand human experience in living and working in space, better understand fundamental biological and physical processes using the unique environment of space, and enable private sector research in space. The Space Station allows unique, long-duration, space-based research in cell and development biology, plant biology, human physiology, fluid physics, combustion science, materials science, and fundamental physics. It also provides a unique platform for observing the Earth's surface and atmosphere, the Sun, and other astronomical objects.

The Space Station program is well on its way to completing work on the U.S. Core Complete configuration, which will enable accommodation of International Partner elements. Flight elements undergoing ground integration and test are proceeding on schedule, and the last U.S. flight element is scheduled for delivery to NASA by the spring of 2003. FY 2004 funding drops as planned, as development activities near an end, and on-orbit operations and research becomes the focus of the program. The budget maintains proposals reflected in the FY 2003 Budget Amendment, including additional funds for reserves and funding for Node 3 and the Regenerative Environmental Control and Life Support System (ECLSS). The budget continues significant progress toward resolving the Space Station management and cost control issues that confronted the program at the end of 2001. Many changes based on recommendations of the ISS Management and Cost Evaluation (IMCE) task force have increased NASA's confidence in achieving success with the U.S. Core Complete station. Management changes have been made to ensure that ISS capabilities are driven by science requirements, and to make appropriate decisions as the program moves from development into operations.

Space Shuttle

The Shuttle, first launched in 1981, provides the only capability in the United States for human access to space. In addition to transporting people, materials, and equipment, the Space Shuttle allows astronauts to service and repair satellites and build the Space Station. The Space Shuttle can be configured to carry different types of equipment, spacecraft, and scientific experiments that help scientists understand and protect our home planet, explore the universe, and inspire the imagination of the American people.

FY 2004 budget request of $3.968 billion supports the planned steady state flight rate of 5 launches per year beginning in FY 2006. It provides $379 million (and $1.7 billion over five years) for the Space Shuttle Service Life Extension Program, which will improve safety and infrastructure needs to allow flying of the Space Shuttle well into the next decade.

Space and Flight Support

The FY 2004 budget request of $434 million supports space communications, launch services, rocket propulsion testing, and advanced systems. Funding is provided for cleanup of the Plumbrook facility and tracking and data relay satellite follow-on studies. The overall funding level reflects the planned transfer of certain space operations responsibilities to other Enterprises.